

SEED LONGEVITY OF THE SIERRA GOOSEBERRY.—*Ribes roezlii* Regel, the Sierra Gooseberry, is the most abundant species of *Ribes* L. in the main timber belt on the western slope of the Sierra Nevada. This ribes attains greatest abundance and vigor on severely disturbed sites on relatively deep and well-developed soils. Barring immediate development of dense brush after forest disturbance, such sites also are the most productive for growing timber. The characteristically prompt occurrence of moderate to vast numbers of gooseberry seedlings on these sites was most readily explainable—even forty years ago—by the “storage” of innumerable viable seeds in the forest floor.

In the fall of 1931, Frank A. Patty, a forest ecologist, collected a supply of ripe gooseberry fruits from numerous bushes on a recently logged area in the vicinity of Pinecrest, Tuolumne County, California. A handful of fruits was mixed with fine river sand from a bar on the South Fork Stanislaus and placed in the bottom of each of about two dozen quart milk bottles. The bottles were buried “bottoms-up” at the bottom of a trench dug about 50 cm deep in the forest floor under a medium-density forest canopy on a gentle slope.

Two bottles were dug up on 15 Sep 1971, 40 years after they had been buried, and transferred to a household refrigerator.

Contents of the bottles were slightly moist when dug. The layer of sand and seeds at the bottom of the bottles contained considerable disintegrated organic matter. The seeds were very dark, almost black, and hardly distinguishable as seeds—and fewer per bottle than expected. Presumably some of the seeds, along with the fruit pulp and skins, had rotted. A few small live conifer roots were found in the neck of one bottle.

Seeds in one sample bottle were separated from the sand on 23 Sep 1971 by drying on paper in a cool basement and by sieving and winnowing. The second sample remained in the refrigerator until 4 Dec 1971, and the seeds were then separated as before. Three germination tests each of 100 cleaned seeds were started on 23 Sep and four more on 4–7 Dec 1971. Culture containers were small shallow “tuna cans”, #2½-size cans (about 10 cm across and 11.5 cm deep), or tarred-paper plant bands (about 7.6 cm square and 7.6 cm deep). Washed river sand was “pasteurized” by heating wet sand over boiling water in a large, covered double-boiler for about three hours. The heat-treated sand was then cooled, put into the culture containers, and compacted. Seeds were counted and planted 6 to 9 mm deep. Ferbam (ferric dimethyldithiocarbamate), a fungicide that seems to do no harm to seeds, was distributed over the surface of the cultures and watered-in. Cultures were periodically inspected, remoistened, and re-treated with ferbam as deemed advisable.

All cultures were kept under good germinative conditions for a year or more, and all went through at least two complete cycles of stratification-germination temperatures. Cultures in small cans commonly were stratified in a household refrigerator and germinated in a basement. Cultures in the larger containers, whenever possible, were stratified by keeping them outside against a north wall during cool to cold weather and were germinated in warm weather under the half-shade of lath covers.

The seven cultures produced a few more than 50 seedlings. Cultures started in September, in general, produced more seedlings than those started in December. Tests in larger containers produced many more seedlings per culture than tests in smaller containers. Also, in the larger containers many more seedlings resulted from a second stratification-germination cycle rather than from the first. Average seedling production per culture of 100 seeds was 1.3 in the first cycle and 6.0 seedlings in the second cycle, an overall mean of 7.3 seedlings.

Obviously some Sierra gooseberry seeds remain viable after storage in the soil of the forest floor for 40 years.

The exact number of bottles remaining in the buried seed cache is unknown, but there are presumed to be six at least. Plans are to recover one or two bottles at 5-year intervals. Thus a set of germination tests on recently exhumed seed is planned for the fall of 1976.—C. R. QUICK, Route 1, Box 318, Clarksburg, California 95612, and F. A. PATTY, 774 Spruce St., Berkeley, California 94707.